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New Business Formation and Underlying Economic Factors

Abstract

The formation of new business affects the economy as a whole, but analyzing local economies can help these specific regions distinguish what factors affect their new business formation. Studies have been conducted on a national scale, but not many have been conducted on local levels in certain areas. Different economic factors could affect different regions in different ways. Knowing the specific economic factors that correlate with new business formation in specific regions could be valuable to building a strong local economy. I will be analyzing data from Illinois, and trying to find out if variables like income per capita, unemployment rate, recession time periods, or existing firms affect new business formation.

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Mark Falotico

I. INTRODUCTION

Every business in the United States was at one point a new startup. For example, GE, Ford and JP Morgan Chase are all major companies today that play a major role in the economy, but they began as small startups or evolved through a small startup. For an economy to develop it needs new businesses, and these new businesses eventually become the building blocks of the economy. Startup companies create jobs immediately, and then continue to create jobs if successful, “In 2015 three million jobs were created from companies one year old and less.” (Bureau of Labor Statistics, 2016). This means that roughly 1.9% of the labor force in the United States was employed by these new companies (Bureau of Labor Statistics, 2016). These new jobs multiply as the companies grow. This is explained when you look at past statistics, “in March 2009 the establishments that had been born before 1993 employed 57.8 million (54.4 %) of the total 106.2 million jobs” (Bureau of Labor Statistics, 2010). Even if these startup companies do not become large public corporations, they still contribute substantially to the economy, “There are between 25 million and 27 million small businesses in the U.S. that account for 60 to 80 % of all U.S. jobs” (Bagley, 2012).

In addition to providing new jobs, new business formation promotes innovation and competitiveness. This innovation may mean finding a way to enter an untapped market, creating a new version of an existing product, or creating a new product or service altogether. Each one of these options has

benefits to the economy as a whole. Entering new markets helps advance the local economy either by providing new jobs, revenue, or enjoyable/needed products. These new entrants can enhance the quality of life in the local economy in a number of ways. The competitiveness that new business formation produces keeps exiting companies motivated to keep enhancing their product so that they can continue to be successful. Along with pushing existing companies to improve, new businesses need to have some type of differentiating component to their company to survive, and this helps to enhance the technology and services of the economy, “a recent study [...] says that small businesses produce 13 times more patents than larger firms” (Bagley, 2012). New business formation helps advance the economy.

With all of the advantages that new business formation brings to the economy, it is intriguing to look at what promotes new business formation, and what economic factors seem to coincide with new business formation. There has been research done on a national level, and they found that in times of recession new business formation has been low, “The number of establishment openings during the period from March 2008 to March 2009 is a record low for both the lowest number of openings and the lowest number of jobs gained from openings since the data series began in March 1994” (Bureau of Labor Statistics, 2010). This 2008 and 2009 time period was during the Great Recession, the largest recession since the Great Depression. Looking forward, can we distinguish whether a certain economic fac-

tor or group of factors determines what promotes or reduces new business formation? Does GDP growth or unemployment rate have a strong correlation with new business development? Learning what promotes the new development of startup companies could be significant due to the impact that they make on the immediate state of the economy and the future.

The formation of new business affects the economy as a whole, but analyzing local economies can help these specific regions distinguish what factors affect their new business formation. Studies have been conducted on a national scale, but not many have been conducted on local levels in certain areas. Different economic factors could affect different regions in different ways. Knowing the specific economic factors that correlate with new business formation in specific regions could be valuable to building a strong local economy. I will be analyzing data from Illinois, and trying to find out if variables like income per capita, unemployment rate, recession time periods, or existing firms affect new business formation.

II. LITERATURE REVIEW

New business formation affects the economy in many different ways. Because of these effects, scholars have studied new business formation from a variety of angles. The primary seminal theoretical work looking at new business formation is by J.A. Schumpeter (1911). This seminal work looks at structural change, and how existing companies are replaced by new businesses when they do not make significant internal changes. As this process continues, the structure of the economy is shifted by the arrival of the new businesses.

Evolving from this work comes the theory that new businesses create efficiencies in the market.

This theory is explored by a piece of work created by Baumol (1988). When new businesses enter a market, they create more competition. This in turn will create pressure for existing firms and new firms to find ways to become more efficient so that they can survive. Another work contributing to J.A. Schumpeter's seminal theory is a publication by D.B. Audretsch (1995). This work explores how new business amplifies innovation in a market place. Audretsch analyzes the lack of willingness of existing firms to look at new innovative business tactics. Instead of taking the innovative route, existing firms tend to try and create more profits from existing processes or products. Due to this lack of interest in innovation, new businesses have an opportunity to penetrate the market and offer a product or service that is superior to those of the existing companies.

It has been proven difficult to draw one consistent conclusion from the empirical work exploring the effects of new business formation on the economy. The inability to draw one conclusion is due to the wide range of factors that can affect new business formation in each of these markets. Many of the empirical works looking at new business formation analyze how new businesses affect unemployment. Despite the challenges as previously mentioned, some researchers have had some success drawing applicable conclusions. One of the first well-respected empirical studies conducted on this topic was by David Birch (1979). This study looked at 5.6 million businesses using the Dun & Bradstreet Corporation data. The goal was to study new business creation because this is integral to regional growth. Birch created a panel set of data and ran panel regressions against it. Birch found that when trying to improve employment, policy makers should focus on creating new jobs instead of keeping the existing ones. This means that promoting new business formation

is a tactic that local governments should strive to pursue. Birch also found that strong local governments create an atmosphere that is more conducive for successful startup businesses.

Another empirical work examining new business formation is by M.A. Carree (2006). The data was taken from 21 OECD countries from 1972-2003, and it explored how new ownership was correlated with efficiency, unemployment, and GDP growth. Carree's study ran regressions using a panel data set, and found a positive correlation between the change in number of business owners with GDP growth and efficiency. The relationship between new ownership and unemployment were varied, and thus it was hard to draw a firm conclusion.

The work that is being conducted in our research looks at how underlying economic factors affect new business formation. The theoretical works cited draw connections between economic growth and new business formation, specifically looking at how new business formation affects other economic factors. I am looking at the question from the opposite side: How do these economic factors affect the new business formation? The empirical research conducted utilizes similar methods as my research. They use a panel set of data and run regressions over a given period of time. The previous empirical research used similar variables to the ones being used for my research: examples are unemployment and the number of existing firms. However, the previous empirical works do not explore the same region, nor do they have the same combination of variables that the research in my study will have.

III. DATA AND METHODS

To conduct this research, data was taken from various sources. The new business formation and established firms data was collected from the United

States Census Bureau in the Business Dynamic Statistics section. The unemployment rates data was gathered from the United States Bureau of Labor Statistics, and Per capita personal income data was found in the United States Bureau of Economic Analysis database. The recession dummy variable data was taken from the National Bureau of Economic Research. For a company to be recorded in the new business formation data, it must have been legally registered within a year. Established firms, on the other hand, are all companies in the specific regions that are operating prior to the beginning of the year. All data for each of these variables has been collected annually from 1990 to 2014. These data sets look at all 9 MSAs in Illinois, which are Bloomington, Champaign-Urbana, Chicago-Naperville, Danville, Decatur, Kankakee, Peoria, Rockford, and Springfield. MSA stand for Metropolitan Statistical Region, and it is an area with a relatively high amount of population with close economic ties throughout the area. Since there are nine MSAs being analyzed over 24 years, there will be 216 observations performed.

The largest MSA by far that we will be looking at is the Chicago-Naperville region, which has an average new business formation of 21,884.12 (Figure 1). In comparison, Rockford, at 656.44, has the second largest average new business formation in Illinois, and close behind are Springfield and Peoria. The smallest MSA that we will be looking at is Danville, which has an average new business formation of 126.56 (Figure 2). After analyzing the data in Excel, new business formation is shown to decrease during times of recession. The opposite trend seems to be occurring with unemployment. When new business formation decreases, unemployment seems to be increasing (Figure 3).

A major piece of data that was not found for all 9 MSAs was population growth over the 24-year peri-

od. This data could have helped take into consideration how the consumer market was fluctuating as new businesses formed in these local regions. Along with population, the data concerning differing tax rates and legal standards in the various MSAs will not be used in the overall comparison, due to the inability to access the data. In the equation being used to perform the regression, there will be an error term, which is included due to the model not fully representing the complete relationship between the independent variables and the dependent variable. Despite some of the weaknesses of the data, its strengths include an ample amount of observations over a 24-year time frame, and the diverse regions that it covers. The data also includes key variables that help analyze the economic health of regions.

Each variable will be transformed into a logarithm. This will help to induce linearity. The regressions will be run with a panel data set. EViews will be the software being used for the regression.

The dependent variable will be new business formation (NBF) and the independent variables will be personnel income per capita, unemployment rate, established firms, and a recession dummy variable. The equation is as follows:

$$\begin{aligned} \log(NBF) = & a_0 + a_1 \log(\text{per capita personal income}) \\ & + a_2 \log(\text{unemployment rate}) \\ & + a_3 \log(\text{established firms}) \\ & + a_4 \text{national recession dummy} + \varepsilon_{it} \end{aligned}$$

With this equation we will be able to see what variables have a positive or negative correlation with new business formation for each of the 216 observations that we have. The error variable will help account for the equation not fully representing the relationship between the dependent and independent variables. We hope that after running this regression with this method, we can see which eco-

nomics variables have a strong correlation with new business formation for these 9 MSAs.

IV. RESULTS

The data collected was from the 9 MSAs in Illinois from 1990-2014. All of the variables were converted into logs to induce linearity of all of the data being analyzed. Using a panel data set, we ran a cross sectional regression using the data listed. This totaled to 213 observations. The final regression equation is as follows:

$$\begin{aligned} \log(NBF) = & a_0 + a_1 \log(\text{per capita personal income}) \\ & + a_2 \log(\text{unemployment rate}) \\ & + a_3 \log(\text{established firms}) \\ & + a_4 \text{national recession dummy} + \varepsilon_{it} \end{aligned}$$

The initial equation included income per capita, but this proved to be statistically insignificant. I then ran the regression with the growth rate of income per capita and this proved to be insignificant again, which led to removing income per capita as a variable altogether. After taking income per capita out of the equation, I found that there were signs of autocorrelation in the regression residuals and the Durbin-Watson statistic was too low. To fix this issue, I created a one-year lag variable with new business entry. This variable captures how many new businesses entered that specific MSA in the previous year. After adding this variable, the autocorrelation and Durbin-Watson statistic changed to acceptable levels. The final regression results are shown on the next page.

As seen in the results, the parameter associated with the unemployment growth rate is statistically significant. I found a negative association between unemployment and new business entry: a 1-percent increase in the growth rate of unemployment decreases new business entry by 0.1719. The next var-

Estimation Results of New Business Entry

9 MSA's of Illinois		1990-2014, N=213
Dependent Variable: New Business Formation		
Unemployment growth Rate	-0.1719***	(-6.0906)
Established Firms	0.5546***	3.1204
Recession Dummy	-0.0371**	(-2.0329)
New Business Entry Lag	0.4107***	6.2271
Constant	-0.7924	
R-squared	0.9947	
S.E. of regression	0.1075	
Durbin-Watson stat	1.8144	
F-statistic	3189.53	

Significance at the 1% (***), 5% (**), and 10% (*) levels (t-values in parenthesis)

variable analyzed is the established firms in the MSA's, and this variable shows that the parameter associated with established firms is statically significant (i.e. its t-statistic has a probability below 0.05). There was a positive association with established firms and new business entry: a 1-percent increase in established firms increases new business entry by .5546 %. The recession dummy variable showed that the parameter associated with recessions is statistically significant (i.e. its t-statistic has a probability below 0.05). The association between new business entry and the recession dummy variable was negative, meaning, that when a recession is occurring, new business formation decreases by .0371. The final variable that was analyzed was new business entry with a lag of 1 year. The regression showed that the parameters associated with new business entry with a 1-year lag was statistically significant (i.e. its t-statistic has a probability below 0.01). The association was positive, meaning that when new business entry from the year prior increased by 1%, this increased the current year's new business entry by .4107.

The R-squared value assess the goodness of fit of the regression, and the R-squared value was

.9947. This means that 99.47% of the variability in the dependent variable was explained by the independent variable. The Durbin-Watson analyzes the serial correlation in the residuals. The first two regressions that were run prior to this final estimation had low Durbin-Watson statistics, indicating there could be auto-correlation. The final regression had a Durbin-Watson statistic of 1.8144. This is at an acceptable level due to its proximity towards the value of 2. The F-statistic reported in the regression output is from a test of the null hypothesis that all of the slope coefficients (excluding the constant, or intercept) in a regression are zero. The F-statistic is 3189.53, which means the null hypothesis is rejected and the reliability of the coefficients estimated is implied.

Overall, what was found was that areas with low unemployment are conducive to new business formation. Income per capita was insignificant, making an argument that income levels in the MSA might not affect new business formation. Instead, the MSA having a high percentage of the population with jobs that provide steady income is more important. Along with this, having established firms in an area appeared to promote further new business entry. This was evident from the positive relationship between established firms, the new business entry lag variable, and new business entry. This shows how established economies create a momentum affect and continue to promote new entrants.

V. CONCLUSION

The data used in this research was collected from the 9 MSA's in Illinois from 1990-2014. The data analyzed how new business formation was affected by underlying economic factors. The research was conducted using panel set data and running a cross sectional regression. All variables were transformed

into logs. The unemployment rate had a negative association with the t-statistic having a probability below 0.01. The established firms had a positive association with the t-statistic having a probability below 0.05. The recession dummy variable had a negative association with the t-statistic having a probability below 0.05. And, the new business entry with a lag year had a positive association with the t-statistic having a probability below .01.

The existing literature on this topic ran regressions using similar methods and variables. A previous empirical work analyzing similar variables by M.A. Carree (2006) found a negative association with unemployment and new business owners. The first substantial piece of empirical work performed on this topic was by David Birch (1979). He found that having a strong local economy helped attract new business entry. A strong local economy, included having a strong local government, but also having ample amounts of established firms in the area. Which coincides with the findings from my regression that showed a positive correlation between established firms and new business entry.

In future research, scholars would be well served to look at how government policy affects new business formation. This could explore tax benefits, grants, and budget allocations towards new business efforts. All of these variables connect with the idea that there is a momentum effect. When new businesses enter into a market, these new businesses promote a higher level of entry in the future. Having incentives for new businesses to enter into an area could play a major factor in overall economic growth.

The findings from the research conducted suggests that new businesses should consider entering into a market that has low unemployment. This could be very beneficial because the new businesses

would have a significant portion of the population in that area with a steady stream of income. This allows for that population to have money to spend on services and goods of local businesses. The research also suggests that launching a new business during the time of a recession would be difficult. In a recession, unemployment usually is high and growth rates are low, which reduces consumption. The most significant findings from the regression indicated that having established firms in an area has the most impact on new business formation. This goes back to the momentum idea that was previously mentioned. When new businesses are created around existing establishments, which already have customers, the customer flow will give exposure to the new businesses entering the market. This concept may be exemplified by the practices of Walgreens and CVS. When CVS was looking for a new location, they tried to place their stores right by Walgreens, "In theory, each store wants the best access to the most customers, so each store wants to locate centrally" (Hawes, 2016). By being close to Walgreens, CVS had access to customer flow. Companies may be hesitant to enter into a crowded market, but competition can be good. The scholar, Baumol (1988), explored the theory that competition was great for companies, due its ability to create efficiencies. New business formation is an important component of the economy, and finding what factors are conducive to new entrants could help shape the future.

APPENDIX

Figure 1: New Business Formation (1990-2014)

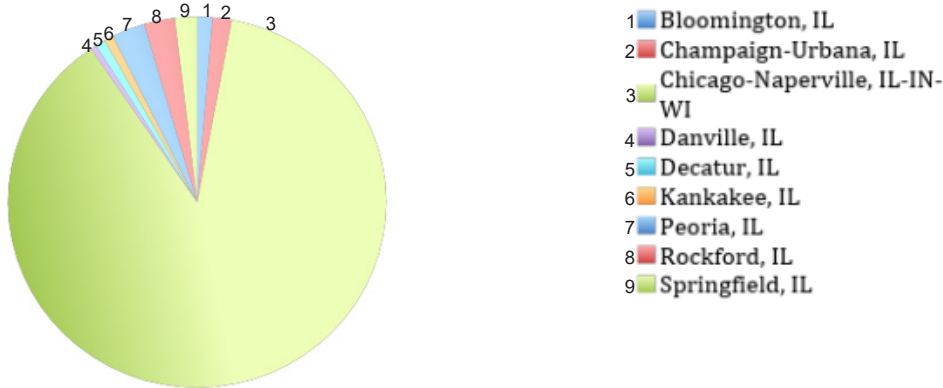


Figure 2: New Business Formation (1990-2014) without Chicago-Naperville

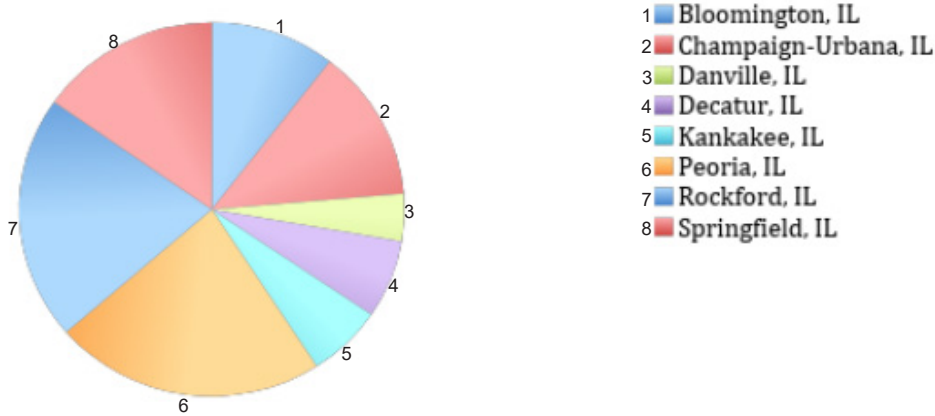


Figure 3: New Business Entry and Unemployment (1990-2015)



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